LESSONS IN DIETETICS

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(Continued from page 772)

DIGESTIBILITY OF MILK

It might be supposed that milk, being a fluid, would only remain a short time in the stomach, and rapidly pass on into the intestine. But we have seen that milk is a fluid only outside the body; when it enters the stomach it sets into a solid clot, owing to the action upon it of rennin. The gastric juice is an acid fluid, and it is, at first sight, surprising that curdling does not take place rather than clotting. That this does not happen is no doubt to be attributed to the fact that the alkaline salts of the milk neutralize the acid first secreted by the stomach and give the rennin time to act before the mixture has attained an acid reaction at all.

After the clot of casein has formed in the stomach, it shrinks into a tough and leathery mass, which offers great resistance to the digestive efforts of the organ. Were the milk merely curdled, the particles of precipitated casein could be dissolved with comparative ease. This is one of the reasons why buttermilk and koumiss are often found to be more "digestible" than milk. It has been found that the density of the clot which milk forms in the stomach depends, on the one hand, upon the amount of casein and lime salts it contains and, on the other hand, upon the degree of acidity of the gastric juice. By reducing the proportion of these factors, the clotting of the milk can either be prevented altogether or made to take place in such a way that the clot is not of great toughness and density. Mere dilution with water lessens the proportion of lime salts and casein and will increase its digestibility. Also, lime water and barley water are used, as diluents, advantageously. Mere dilution tends to reduce the acidity of the gastric contents, and so helps to prevent retraction of the clot.

Boiled milk, although it clots more slowly and gives a less dense clot than raw milk, outside the body, must not be supposed to act differently in the stomach than the raw milk. This is a common fallacy.

The exact time that milk remains in the stomach, under ordinary circumstances, has been determined by causing a healthy man to drink a definite quantity of milk, and then washing out the stomach at short intervals. In this way it has been found that a glass of milk has entirely left the stomach about two hours after it was swallowed, whilst a pint of milk is disposed of in about three and a half hours.

ABSORPTION OF MILK

After leaving the stomach, the digestion of milk is completed by the pancreatic juice. This juice acts very powerfully on milk, more so than the gastric juice, and therefore milk rarely escapes digestion.

Even under favorable conditions, only 90 per cent. of the available potential energy contained in milk ever reaches the blood. The rest escapes from the body as unabsorbed waste.

It is a remarkable fact that milk is much better absorbed by young children than by adults. In the case of babies, the absorption is more complete, the difference being to a large extent due to a more complete absorption of the mineral constituents, the reason for which is the greater demand for lime salts in the infant.

NUTRITIVE VALUE OF MILK

It is frequently said that milk is a perfect food. Now this is a high claim and can only be justified in the case of any food if it fulfills all of the following conditions:

1. It must contain all the nutritive constituents required by the body; proteids, fats, carbohydrates, mineral matter and water.
2. It must contain these in their proper relative proportions.
3. It must contain the total amount of nourishment required daily in a moderate compass.
4. The nutritive elements must be capable of easy absorption and yet leave a certain bulk of unabsorbed matter to act as intestinal ballast.
5. It must be obtainable at a moderate cost.

Milk only conforms to the first of the conditions above laid down. As an article of diet in disease, milk occupies a unique position. No single food is of so much value. The drawbacks to its exclusive use in health are, in sickness, of no account, or are even converted into advantages.

Among the normal symptoms exhibited by a patient on exclusive milk diet are a certain amount of drowsiness and the passage of a large quantity of urine of a pale greenish color, which gives no brownish-red ring on the addition of HNO_3. The tongue is covered with a white fur and there is often a sweetish taste in the mouth. A moderate degree of constipation is a good sign, orange colored stools being passed at intervals of two or three days. If this symptom becomes too pronounced, a little coffee or caramel may be added to the morning's milk, or a little stewed fruit may be taken once a day. Diarrhœa is due to the use of a too rich milk.

(*To be continued.*)

THE DAY OF THE DOG

BY FELIX J. KOCH

IT was on the shore at Gibraltar that we met him, one splendid June morning. Hot, sweltering,—even the Moors from Tangiers were complaining.

He was an English dog, property probably of some officer's wife at the citadel on the hill. He had wandered away from Tommy Atkins, however, to mingle with the common herd on His Majesty's highway.

But, doggy had a headache and so they had fixed him up. Splendid piece of nursing, is n't it? Notice the care with which the bandage is bound about the head.

One sees these dog bandages often in the hot countries, sometimes as a preventive rather than cure, to keep the torrid sunbeams from the dog's head.

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NOTES ON IMMUNITY TO DISEASE.—*The New York Medical Journal*, quoting from *The Scottish Medical and Surgical Journal*, says: Harvey and McKendrick review our vaccinotherapy. The applications are numerous. Some have been more successful than others. A tubercle vaccine—Koch's tuberculin—has been used for the cure of lupus, tuberculous glands, tuberculous sinuses, and genito-urinary tuberculosis. It has been also used in early cases of phthisis. A staphylococcus vaccine has been used for boils, acne vulgaris, sycosis, malignant endocarditis, certain cases of pyæmia, and other such affections due to this organism. A bacillus coli vaccine is useful in some cases of appendicitis, cystitis, and cholecystitis. It is quite possible that an efficient gonorrhœal vaccine may be found which will be useful in chronic cases. We may hope for a dysentery vaccine, Malta fever vaccine, and pneumococcus vaccine.